UNITED NATIONS

SECRETARIAT

ST

GENERAL

ST/SG/AC.10/4/Add.1
10 January 1979

Original: ENGLISH

COMMITTEE OF EXPERTS ON THE TRANSPORT OF DANGEROUS GOODS

REPORT OF THE COMMITTEE OF EXPERTS ON ITS TENTH SESSION
(4 - 13 December 1978)

Addendum 1

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Annex 1

SCOPE OF THE RECOMMENDATIONS
(ST/SG/AC.10/1/Rev.1 - Chapter 1)

Amendments adopted by the Committee

Paragraph 1.12

Read the definition of Division 1.5 as follows:

"Division 1.5 Very insensitive substances which have a mass explosion hazard

This Division comprises explosive substances which are so insensitive that there is very little probability of initiation or of transition from burning to detonation under normal conditions of transport. As a minimum requirement they must not explode in the external fire test (see 6.03).

NOTE. The probability of transition from burning to detonation is greater when large quantities are carried in a ship."

Paragraph 1.23

Read the definition of Division 6.2 as follows:

"Division 6.2 Infectious substances

Substances which are infectious or are reasonably suspected to be infectious for man or animals."

Paragraph 1.27

Insert in this paragraph:

"This class comprises:

Division 9.1 Miscellaneous substances not falling within the other Classes or the other Division of this Class.

Division 9.2 Lachrymatory substances not falling within any other Class."

Paragraph 1.42

Amend the two first lines of the fourth column of table of precedence as follows:

3	I	NO CHANGE	NO CHANGE	6.1	3	3	3	3	NO CHANGE
3	II			6.1	3	3	3	3	

ANNEX 1

SPECIAL PROVISIONS RELATING TO INDIVIDUAL UNNUMBERED AND ARTICLES
(ST/SG/AC.10/1/Rev.1 - Chapter 3)

Amendments proposed by the Secretariat

(1) Addition

167 Nitrocellulose with not less than 12.6 per cent nitrogen by weight, or not less than 12 per cent plasticizing substance by weight, but not exceeding 12.6 per cent nitrogen by dry weight, packed in receptacles so constructed that explosion by reason of increased internal pressure is not possible may be appropriately classified in Division 4.1 (Serial number 2556 or 2557).

106 Classified as dangerous for air transport only.

107 If the sender declares that the consignment has no self-heating properties, it may be carried as a non-dangerous article.

109 Arrangements for the carriage of this substance must conform to the provisions of Chapter 2, paragraph 2.8.

110 Packing to be determined by the competent authorities.

112 Packing Group according to the corrosivity criteria.

113 The carriage of chemically unstable mixtures should be prohibited.

114 This substance may be carried in quantities not exceeding 500 grammes.

115 The carriage of this substance

mechanically produced having a particle size less than 7 microns; and
chemically produced having a particle size less than 10 microns

should be prohibited in the dry state.

This substance

mechanically produced having a particle size above 53 microns; and
chemically produced having a particle size above 340 microns

is considered as not dangerous.

117 Classified as dangerous only in the case of carriage by sea.

118 The detonating fuze must incorporate protective features such that it is very unlikely to cause detonation of a contrivance in the conditions encountered in transport (paragraph 3.60 "Initiation, means of ... (2)").

119 Exempt if containing less than 12 kg non-inflammable, non-toxic liquefied gas.

120 The nickel is precipitated on a carrier and a special activator.

121 This substance when packed in P20x, P24 or P2[illegible] requires for safety reasons control temperatures below +20°C (see indicated control temperatures). Because of the inherent safety characteristics of this very dilute dispersion the emergency temperature is permitted to be higher than that allowed by table 11.2 in Chapter II.

122 Trial quantities of new or new formulations of existing organic peroxides in consignments not exceeding 500 kg. should be carried only under conditions specifically designated by the competent authorities of at least the country of origin and the country of destination.

123 This substance is considered dangerous for air and sea transport only. For air transport, packagings must meet Packing Group I requirements.

124 Substances under this entry should be essentially dangerous to humans or to humans and animals and for which notification of a public health authority is desirable in the event of a spillage.

125 Substances under this entry should be essentially dangerous to animals only and for which notification of a veterinary authority is desirable in the event of a spillage.

126 Sodium percarbonate dihydrate, is considered as non-dangerous.

127 Other inert material or inert material mixture may be used at the discretion of the competent authority, provided this inert material has identical phlegmatizing properties.

128 Full information respecting the schedule and its contents may be found in the IAEA Regulations for the Safe Transport of Radio-active Materials.

129 Packing Group I, II or III according to grouping criteria for each hazard.

130 Packing Group I or II according to grouping criteria for each hazard.

(2) Amendment

Replace existing special provision 55 by:

"55 These mixtures, if nitric acid content is:

more than 50 per cent, should be placed in Packing Group I and carry a subsidiary risk label of Division 5.1;

not more than 50 per cent, should be placed in Packing Group II and not carry a subsidiary risk label."

Replace existing special provision 77 by:

"77 Samples of new or existing organic peroxides in quantities not exceeding 10 kg per consignment on the condition that they are not more hazardous than any organic peroxide already listed. The conditions of transport should be approved by the competent authority of the country of origin. The control temperature should be in accordance with paragraph 11.5 and subsequent relevant paragraphs."

Replace existing special provision 100 by:

"100 Exempt if containing 60 per cent or more inert inorganic solids and in packages containing not more than 100 kg in the whole package."

(3) Deletion

Delete special provisions Nos. 65, 66, 69, 74, 84, 87, 93, 95, 95 and 99.

Annex 4

SPECIAL RECOMMENDATIONS RELATING TO CLASS 1
(ST/SG/AC.10/1/Rev.1 - Chapter 4)

The Committee adopted annex 5 of document ST/SG/AC.10/C.1/2 for inclusion into ST/SG/AC.10/C.1/R.1/Rev.1, after having made the following changes:

Under "Test series 1", read (c):

"(c) A combustion test or a thermal test (e.g. a Koenen test)."

Under "Test series 2", read (c):

"(c) A stability test.",

and decided to send back this document for further study to the next session of the Group of Experts on Explosives.

Amendments adopted by the Committee

Paragraph A.(2)

Replace the existing description of "Boosters (caps)" by:

"Boosters (caps)

Articles containing a detonating explosive and used to increase the initiating power of detonators or detonating cord (fuse)."

Replace the description of "Explosives, blasting, type B" by:

"Explosives, blasting, type B

Blasting explosives which are mixtures of ammonium nitrate or other inorganic nitrates with explosives such as trinitrotoluene, with or without other substances such as wood-meal and aluminium powder; or mixtures of ammonium nitrate or other inorganic nitrates with other combustible substances which contain no explosive ingredients. */ These explosives shall not contain nitroglycerin, similar liquid organic nitrates, or chlorates.

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*/ The 'explosive ingredients' are 'explosive substances' as defined in paragraph 1.11."

Figure A.1

In column "J" insert "1.1 J" opposite Hazard Division "1.1" and insert "1.2 J" opposite Hazard Division "1.2".

Figure 4.2

Amend the definitions of Compatibility Groups E and F as follows:

(a) Compatibility Group E. Add at the end of the definition: "(other than one containing an inflammable or hypergolic liquid)";

(b) Compatibility Group F. Read: "Article containing secondary detonating explosive, with its own means of initiation, with a propelling charge (other than one containing an inflammable or hypergolic liquid) or without a propelling charge".

Annex 5

SPECIAL RECOMMENDATIONS RELATING TO CLASS 3
(ST/SG/AC.10/1/Rev.1 - Chapter 5)

Amendments adopted by the Committee

Paragraph 5.3

Replace existing text by:

"5.3 Table 1 should be used for the determination of the hazard grouping of a liquid that presents a risk due to inflammability. For liquids whose only hazard is inflammability, the packing group for the material is the hazard group shown in the table below. For a liquid possessing an additional hazard(s), the hazard group determined from table 1 below and the hazard group based on the severity of the additional hazard(s), should be considered. In such cases, the table of precedence of hazard characteristics appearing in paragraph 1.d.2 should be used to determine the correct classification of the liquid. The most severe hazard grouping based on the different hazards of a material should then be the packing group for the material.

Table 1

Hazard Grouping based on Inflammability

Packing Group	Flash Point (Closed-cup)	Initial Boiling Point
I	< 23°C	≤ 35°C
II	< 23°C	> 35°C
III	≥ 60.5°C	> 35°C

Viscous substances having a flash point below 23°C may be placed in Packing Group III in conformity with paragraphs 5.5 and 5.6."

Paragraph 5.5

Read title:

"Determination of grouping of inflammable viscous substances with a flash point of less than 23°C"

Read the end of second line:

"... with a flash point of less than 23°C."

Paragraph 5.6

Read beginning of paragraph:

"Viscous inflammable liquids such as paints, enamels, varnishes, adhesives and polishes with a flash point below 23°C are grouped in Group III provided that:"

Annex 6

SPECIAL RECOMMENDATIONS RELATING TO CLASS 6
(ST/SG/AC.10/1/Rev.1 - Chapter 6)

amendments adopted by the Committee

Replace existing chapter 6 by the following:

"SPECIAL RECOMMENDATIONS RELATING TO CLASS 6

PART A - DIVISION 6.1
POISONOUS (TOXIC) AND INFECTIOUS SUBSTANCES

Criteria for defining toxicity

6.1 The substances of Division 6.1 including pesticides have been allocated among three groups according to the degree of their toxic hazards in transport.

6.2 In making this grouping, account has been taken of human experience in instances of accidental poisoning, and of special properties possessed by any individual substance, such as liquid state, high volatility, any special likelihood of penetration, and special biological effects.

6.3 In the absence of human experience the grouping was based on the available data from animal experiments. When a substance exhibits a different order of toxicity by two or more routes of administration the highest degree of toxicity was used in making the allocation.

In the case of inhalation toxicity three sets of criteria, as defined in table 6.4 (b) are available. At least data of LC_{50} and boiling point should be used for assigning a substance to its packing group. When additionally correct data of toxic point and vapour concentration at 20°C are available the assignment of packing group should be based on agreement between any two of these techniques. If the techniques used give different results the substance should be placed into the highest indicated hazard group.

6.4 The criteria for the three routes of exposure are as follows:

Table (a) For all toxic substances

Group	Oral toxicity LD_{50} (mg/kg)	Dermal toxicity LD_{50} (mg/kg)	Inhalation toxicity by dusts and mists LC_{50} (mg/l)
I	$\leqslant$ 5	$\leqslant$ 40	$\leqslant$ 0.5
II 1/	> 5-50	> 40-200	> 0.5-2
III	Solids: > 50-500 Liquids: > 50-2 000	> 200-1 000	> 2-10

1/ Those gas substances are included in group II which at the base relation to them do not correspond to the values shown.

Table (b) Additional for volatile toxic substances

Group	Criteria based on LC_{50} and		
	Toxic point A	Boiling point B	Vapour concentration at 20°C C
I	$\leqslant$ 2.7	$\leqslant$ 4.5	$\leqslant$ 50
II _/	> 2.7-3.6	> 4.5-5.7	> 50-500
III	> 3.6-5.1	> 5.7-6.9	> 500-5 000

_/ Tear gas substances are included in group II even if the data relating to them do not correspond to the values shown.

6.5 Definitions

(a) LD_{50} for acute oral toxicity

That dose of the substance administered which is most likely to cause death within 14 days in one half of both male and female young adult white rats weighing about 200-300 grams. The number of animals tested shall be sufficient to give a statistically significant result and be in conformity with good pharmacological practices. The result is expressed in milligrams per kg body weight.

(b) LD_{50} for acute dermal toxicity

That dose of the substance which, administered by continuous contact for 24 hours with the bare skin of the rabbit, is most likely to cause death within 14 days in one half of the animals tested. The number of animals tested shall be sufficient to give a statistically significant result and be in conformity with good pharmacological practices. The result is expressed in milligrams per kg body weight.

(c) LC_{50} for acute toxicity on inhalation

That concentration of vapour, mist or dust which, administered by continuous inhalation to both male and female young adult white rats weighing about 200-300 grams for one hour, is most likely to cause death within 14 days in one half of the animals tested. If the substance is administered to the animals as dust or mist, more than 80 per cent of the particles available for inhalation in the test must have a diameter of 10 microns or less, provided that it is reasonably foreseeable that such concentrations could be encountered by man during transport. The result is expressed in milligrams per litre of air for dusts and mists or in millilitres per cubic metre of air (parts per million) for vapours.

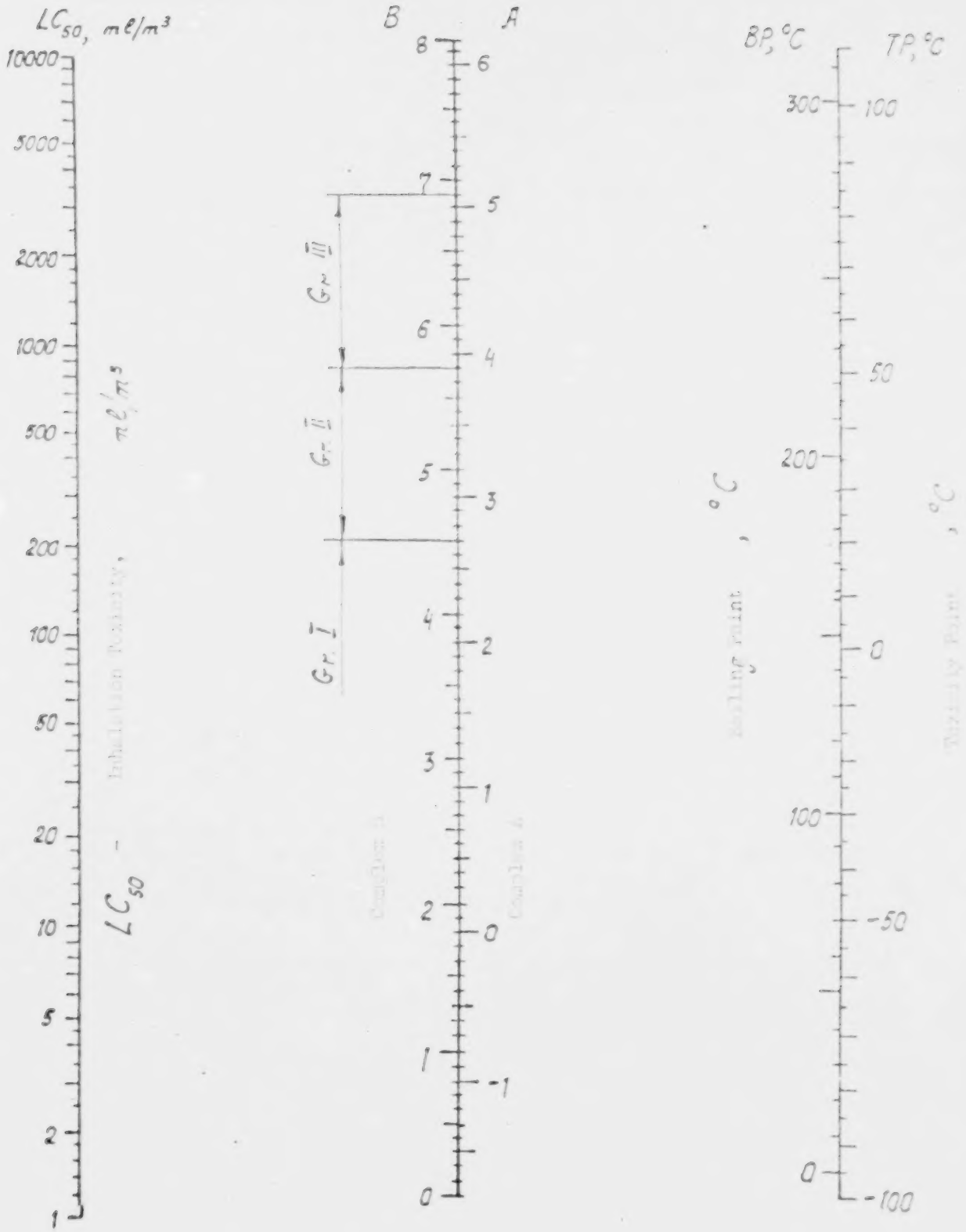
(d) A-complex toxicity criteria based on the substance's LC_{50} and toxic point (T_p)

This is a combined parameter for the degree of the inhalation toxicity of the substance, calculated from the equation:

$$A = \lg LC_{50} + 0.0018\ T_p$$

where: T_p (toxic point) is that temperature of the substance at which its saturated vapour concentration is equal to LC_{50}.

A-complex may be estimated by the use of the nomograph shown.


LC_{50}, mℓ/m³
10000
5000
2000
1000
500
200
100
50
20
10
5
2
1
LC_{50} - Inhalation Toxicity, mℓ/m³
B
A
8
7
6
5
4
3
2
1
0
6
5
4
3
2
1
0
-1
Gr. III
Gr. II
Gr. I
BP, °C
TP, °C
300
200
100
0
100
50
0
-50
-100
°C
Boiling Point, °C
Freezing Point, °C

(e) B-complex toxicity criteria based on the substance's LC_{50} and boiling point (BP)

This is a combined parameter for the degree of the inhalation toxicity of the substance, calculated from the equation:

$$B = \lg LC_{50} + 0.0123\ BP$$

B-complex may be estimated by the use of the nomograph shown.

(f) C-complex-toxicity criteria based on the substance's LC_{50} and volatility

This is a combined parameter for the degree of the inhalation toxicity of the substance, calculated from the equation:

$$C = \left(\frac{LC_{50}}{V}\right)^2$$

where: V is volatility, i.e. the saturated vapour concentration of the toxic substance at 20°C, in ml/m³.

6.6 Substances and preparations used as pesticides

Packing group I: substances and preparations presenting a risk of very severe poisoning, as specified in table 6.1.

Packing group II: substances and preparations presenting a risk of severe poisoning, as specified in table 6.1.

Packing group III: harmful substances and preparations, as specified in table 6.1.

Notes to packing groups I, II, III

(a) All active substances and their preparations used as pesticides shall be classified under packing groups I, II and III in accordance with the criteria of 6.4.

(b) If only the LD_{50} value of the active substance is known and not that of the preparations of that active substance, the preparation may be classified under packing groups I, II and III, using table 6.1, where the figures shown in the columns I, II and III represent the percentage of active pesticide substance in the preparations.

(c) For substances which are not named in table 6.1, and for which only the LD_{50} value of the active substance is known and not the LD_{50} values of the various preparations, the classification of a preparation may be determined from the table in 6.4, using the LD_{50} value obtained by multiplying the LD_{50} value of the active substance by $\frac{100}{x}$, x being the percentage of active substance by weight, according to the following formula:

$$LD_{50} \text{ value of the preparation} = \frac{LD_{50} \text{ value of the active substance} \times 100}{\text{percentage of active substance by weight}}$$

(d) The classification according to Notes (b) and (c) above shall not be used when the preparations contain additives which affect the toxicity of the active substance or when a preparation contains several active substances. In such cases, the classification shall be based on the LD_{50} values of the preparation in question according to the criteria of 6.6. If the LD_{50} values are not known, the substance shall be classified under packing group I.

Segregation from foodstuffs

6.7 Substances marked as or known to be poison (Groups I, II and III) must not be carried in the same railway wagon, lorry, hold of a ship, compartment of an aircraft or other conveyance with substances marked as or known to be foodstuffs, feeds or other edible substances intended for consumption by humans or animals. Relaxations of this position can be allowed for substances of groups II and III provided the competent authority is satisfied that the packing and segregation are adequate to prevent the contamination of foodstuffs, feeds or other edible substances intended for consumption by humans or animals.

Decontamination of conveyances

6.8 A railway wagon, lorry, cargo space of a ship, compartment of an aircraft, or other conveyance which has been used to carry substances marked as or known to be poison (Groups I, II and III) must before re-use be inspected for contamination. A railway wagon, lorry, hold of a ship, compartment of an aircraft, or other conveyance which has been contaminated must not be returned to service until such contamination has been removed.

Table 6.1

Grouping of pesticides according to percentages of active substance

The purpose of this list is to show the range of pesticide formulations falling within the respective groups according to the quantity of active substance.

Name	I	II	III solid	III liquid
Acephate				100-40
Aldrin		100- > 75	75-7	75-2
Aldicarb	100- > 15	15- > 1	1- > 0	1- > 0
Allethrin				100-30
Allidochlor			10-35	100-35
Aminocarb		100- > 60	60-6	60-1
Amidothion				100-30
Arsenic Compounds		100- > 20	20-2	20-0.5
Azinphos Ethyl		100- > 25	25-2	25-0.5
Azinphosmethyl		100- > 20	20-2	20-0.5
Barban				100-30
Bendiocarb		100- > 65	65-5	65-1
Bentazone				100-50
Benzylprop-Ethyl				100-75
Benzulide				100-35
Benquincy			100-20	100-5
Binapacryl			100-25	100-5
Bromophos-Ethyl			100-15	100-3
"Bomyl"		100- > 60	60-6	60-1
Bromoxynil			100-35	100-10
Butocarboxim			100-30	100-5
Carbaryl			100-15	100-4
Carbofuran		100- > 10	10-1	10- > 0
Carbophenothion		100- > 20	20-1	20-0.5
Chlordane			100-55	100-10
Chlordecone			100-15	100-4
Chlordimeform			100-50	100-10
Chlordimeform Hydrochloride			100-70	100-15
Chlorfenvinphos		100- > 20	20-2	20-0.5
Chlormequat				100-30
Chlormephos		100- > 15	15-4	15- > 0
Chlorobenzilate				100-[illegible]
Chloropicrin			100-50	10[illegible]
Chloroplacinone	100- > 40	40- > 4	4- > 0	4- > 0
Chlorthiophos	100- > 40	40- > 5	5- > 0	5- > 0
Copper Sulfate			100-60	100-10
Crotoxyphos			100-25	100-5
Coumachlor			100-10	100-2

Name	I	II	III	
			solid	liquid
Copper compounds to be classified according to LD_{50} values				
Coumafuryl			100-30	100-20
Coumaphos		100- >30	30-3	30-0.5
Crimidin	100- >25	25- > 2	2- > 0	2- > 0
Crotoxyphos			100-15	100-4
Crufomat			100-40	100-20
Cycloheximidine			100-10	100-3
Cyanazine			100-35	100-10
2.4-D			100-75	100-15
Dazomet			100-60	100-15
4-DB			100-40	100-10
DDT			100-20	100-5
Demephion	100- > 0	-	-	-
Demeton-O-Methyl				
1) Thiono Isomer			100-35	100-5
2) Thiol Isomer			100-10	100-
Demeton-S-Methyl		100- >80	80-8	80-2
Demeton-S-Methyl sulfoxide	100- >50	50- > 5	5- > 0	5- > 0
Demeton	100- >30	30- > 3	3- > 0	3- > 0
2.4-DEP			-	100-35
Desmetryne			-	100-65
Diallate			100-80	100-20
Dialiphos			100-10	100-2
Diazinon			100-15	100-4
1.2-Dibrom-3-Chlorpropane			100-30	100-5
Dicamba			-	100-50
Dichlorprop			-	100-40
Dichlorfluanide			-	100-25
Dichlorfenthion			100-50	100-10
Dichlone			-	100-80
Dichlorvos		100- >35	35-5	35-5
Dicufol			-	100-25
Dicoumarin			100-10	100-2
Dicrotophos		100- > 25	25-3	25-0.5
Dieldrin		100- > 40	40-10	40-2
Difenzoquat			100-40	100-20

Name	I	II	III solid	III liquid
Dimefox	100–> 20	20–> 2	2–> 0	2–> 0
Dimethoate			100–30	100–10
Dimetilan		100–> 20	20–2	20–3
Dimexan			100–45	100–10
Dinoseb		100–> 40	40–5	40–5
Diposeb-Acetate			100–10	100–3
Dinoterb		100–> 50	50–5	50–1
Dinoterb-Acetate			100–10	100–5
Dioxacarb			100–10	100–5
Dioxathion		100–> 40	40–4	40–1
Dinobuton			100–10	100–2
Diquat			100–45	100–10
Diphacinone	100–> 15	15–> 0	-	-
Diphenamid			100–50	100–10
Disulfoton		100–> 15	15–2	15–> 0
Dithianon			-	100–50
DNOC		100–> 50	50–5	50–1
Dodine (=Acetate)				100–25
Drazoxolon			100–25	100–5
Chlorpyrifos (= Dursban)			100–15	100–4
(Dymfate = Ronophos see there)				
Endosulfan		100–> 80	80–8	80–2
Endothal		100–> 75	75–5	75–2
Endothion		100–> 45	45–5	45–1
Endrin		100–> 60	5–> 0	5–> 0
EPTC			-	100–80
EPN	100–> 75	75–> 15	15–3	15–3
Ethion		100–> 25	25–2	25–0.5
Ethoate-Methyl			100–25	100–5
Ethoprophos	100–> 65	65–> 10	10–3	10–3
5-Ethoxy-3-trichloromethyl-1,2,4-thiadiazol			-	100–50

Name	I	II	III solid	III liquid
Etridiazole			-	100–50
Fenuchloralin			100–> 0	100–> 0
Fenitrothion			100–50	100–10
Fenoprop			-	100–50
Fensulfothion	100–> 40	40–> 4	4–> 0	4–> 0
Fentin-Acetate			100–25	100–5
Fentin-Hydroxyde			100–120	100–5
Fenthion			100–50	100–15
Fluoracetamid		100–> 50	50–5	50–0,5
Fluoride Compounds			100–10	100–5
Formetanate		100–> 40	40–4	40–1
Formothion			100–65	100–15
Fonofos (Dyfonate)	100–> 60	60–> 6	6–> 0	6–> 0
Heptenophos		100–> 80	80–10	80–2
Isazofil			100–60	100–15
Isoxynil			100–30	100–20
Isopenfos	100–> 5	5–> 1	1–> 0	10–> 0
Isolan		100–> 10	10–1	1–> 0
Isolane		100–> 20	20–2	20–0,5
Isoprothiolane			-	100–0
Linuron			100–20	100–5
Malathion			-	100–50
MCPA			-	100–35
MCPB			-	100–40
Mecarbam		100–> 50	50–5	50–0,5
Mecoprop				100–50
Medinoterbe		100–> 80	80–0	80–0
Mephosfolan halogen.	100–> 70	70–> 5	5–> 0	5–> 0
Mercuric compounds Mercurous compounds	100–> 70	70–> 0		
Metaldehyde			100–50	100–10

Name	I	II	III	
			solid	liquid
Methidathion		100–> 40	4 -4	4–1
Methiocarb			100–10	10–3
Methomyl		100–> 30	30–3	30–0.5
Methyl Isothiocyanate			100–35	100–8
Methyltrithion			100–15	100–4
Mevinphos	100–> 60	60–> 5	5–> 0	5–> 0
Halogenated mercurous compounds			100–> 40	100–> 10
"Mirex"			100–60	100–15
Moham			100–10	100–3
Molinate			-	100–25
Monocrotophos		100–> 25	25–5	25–0.5
Morphamquat			100–65	100–15
Morphothion is not more produced				
Metaldenyde				100–30
Nabame			100–80	100–20
Naled			100–50	100–10
(Nemagon see 1,2 Dibrom-3-Chlorpropane)				
Nicotine			100–10	100–2
Nitrofen			-	100–30
Omethoate			100–10	100–3
Oxamyl		100–> 10	10–1	10–> 0
Oxydemeton-Methyl		100–> 90	90–9	90–2
Oxydisulfoton	100–> 70	70–> 5	5–> 0	5–> 0
Paraoxon	100–> 35	35–> 5	5–> 0	5–> 0
Paraquat		100–> 40	40–4	40–4
Parathion	100–> 4	4–> 0	-	-
Parathion-Methyl		100–1	15–1	15–> 0
Penoxalin			-	100–50
Pentachlor phenol		100–> 50	50–5	50–1

Name	I	II	III	
			solid	liquid
Phenkapton			100–10	100–2
Phorate	100–>20	20–>2	2–>0	2–>0
Phosalone			100–20	100–5
Phosmet			100–15	100–4
Phosfolan		100–>15	15–3	15–0.5
Phosphamidon		100–>30	30–3	30–0.5
Pindone and Salts			100–55	100–10
Pirimicarb			100–75	100–20
Pirimiphos Ethyl			100–30	100–5
Promecarb		10–>2	20–2	20–2
Propachlor			–	100–35
Propoxur			100–15	100–4
Propanil			–	100–25
Protoluazon-Hydrochloride			–	100–35
Prothoate		100–>25	25–4	25–>0
Pyrazoxon	100–>80	80–>5	5–>0	5–>0
Pyrethrin			–	100–5
Pyrimiphos			100–55	100–15
Quinomethionate			–	100–55
Rotenone			100–25	100–5
Rynia			–	100–50
Sabadilla				
Sabulan (not zero manufactured)				
Sodium arsenite		100–>20	20–2	20–0.5
Strychnine	100–>20	20–>0	–	–
Sulfallate			–	100–10
Sulfur		100–>10	10–>0	10–>0
2,4,5-T		–	100–40	100–10
Temephos			–	100–30

Name	I	II	III	
			solid	liquid
TEPP	100-> 10	10-> 0	-	-
Terbumeton			-	100-20
Terbufos	100-> 15	15-> 3	3-> 0	3-> 0
Thallium Compounds to be classified according to LD50 available				
Thallium Sulfate		100-> 30	30-3	30-0.5
Thiometon		100-> 50	50-5	50-1
Thionazin (Zinophos)	100-> 70	70-> 5	5-> 0	5-> 0
Thiram			-	100-25
Thioquinox			-	100-50
Tetradifon			-	100-25
Triallate			-	100-50
Toxaphene (Camphechlor)			100-10	100-3
Triamiphos		100-> 20	20-2	20-0.5
Tributyltin-Compds.			100-25	100-6
Tricamba			100-60	100-15
Trichloronate		100-> 30	30-3	30-0.5
Trichlorphon		-	100-80	100-20
Cyhexatin		-	100-55	100-10
Tridemorph			-	100-30
Triphenyltin-Compounds			100-40	100-10
Vamidothion			100-10	100-3
Warfarin and Salts	100-> 20	20-> 2	2-> 0	2-> 0
Zectran		100-> 25	25-2	25-0.5

PART B - DIVISION 6.2

DEFINITION OF 'INFECTIOUS SUBSTANCES'

6.9 (a) "Infectious substances" are defined as those substances which are infectious or are reasonably suspected to be infectious for man or animals.

(b) Animal and human vaccines, including seed strains approved for the preparation of live vaccines are regarded as infectious substances only if no licence for their manufacture has been issued by the control authority of the country in which they were produced.

6.10 In certain cases, some licensed vaccines may present a biohazard only in certain parts of the world. In that case national authorities may require these vaccines to conform with the requirements for infectious substances or may impose other restrictions.

RESPONSIBILITY OF CONSIGNOR OF INFECTIOUS SUBSTANCES

CO-ORDINATION

6.11 The shipment of infectious substances requires co-ordinated action by the consignor, the carrier and the consignee to ensure safe transport and arrival on time and in proper condition. To this end, the measures recommended below should be taken:

(a) Advance arrangements between consignor, carrier and consignee

Despatch of infectious substances should not take place before advance arrangements have been made between consignor, carrier and consignee and before the consignee has confirmed with his national authorities that the substances can legally be imported and that no delay will be incurred in the delivery of the consignment to its destination.

(b) Preparation of dispatch documents

In order to secure transmission without hindrance it is necessary to prepare all transport documents, including the consignor's certificate, as shown in figure 15.1, in strict accordance with rules governing the acceptance of the materials to be dispatched. If the substance is perishable, warnings should appear on an accompanying transport document for instance: "Keep cool +2/+4°C" or "Keep frozen" or "Do not freeze". The full address of the consignee should be shown on the appropriate transport document, together with the name of a responsible person and his telephone number.

(c) Routing

Whatever the mode of transport used, shipment should be by the most direct route. If transhipment is necessary, precautions should be taken to ensure special care, expeditious handling and monitoring of the substances in transit.

The transport documents should show the number of the flight or train, its date and the name(s) of the airport(s) or station(s) of transhipment.

(d) Timely notification of all transportation data by shipper to consignee

The consignor should notify the consignee in advance of shipping details, such as means of transport, flight or train number(s), consignment document number and date and hour of expected arrival at the point of destination so that the consignment can be collected promptly. The most rapid means of communication should be used for this notification.

PACKING

6.12 Consignors of infectious substances should ensure that packages are prepared in such a manner that they arrive at their destination in good condition and present no hazard to persons or animals during conveyance. The packaging should include the following essential elements:

(a) An inner packaging comprising:

(i) a watertight primary receptacle;

(ii) a watertight secondary packaging;

(iii) absorbent material placed between the primary receptacle and the secondary packaging. If several primary receptacles are placed in a single secondary packaging, they should be wrapped individually so as to prevent contact between them. The absorbent material, such as cotton wool, should be in sufficient quantity to absorb the entire contents of the primary receptacles. A non-hygroscopic substance which does not evaporate under shipping conditions should be added to inactivate the infectious substances in case of accidental spillage.

Inner packages containing infectious substances should not be consolidated with other inner packages.

(b) An outer packaging of sufficient strength to pass the performance tests provided for in paragraph 6.12. The smallest over-all external dimension of packagings used for freight shipments shall be at least 10 cm.

Apart from exceptional consignments, such as whole organs, requiring special packaging, infectious substances should be packed according to the following guidelines:

Lyophilized substances

Primary receptacles include flame-sealed glass ampoules or rubber-stoppered glass vials fitted with metal seals.

Liquid or solid substances

(a) Substances shipped at ambient temperature or a higher temperature

Primary receptacles may be of glass, metal or plastics. Positive means of ensuring a leak-proof seal should be provided such as a heat seal, a skirted stopper or a metal crimp seal. If screw caps are used these should be reinforced with adhesive tape.

(b) Substances shipped refrigerated or frozen (wet ice, refrozen packs, dry ice)

Primary receptacles closed by screw caps should not be used. Ice or dry ice should be placed outside the secondary packaging(s). Interior supports should be provided to secure the secondary packaging(s) in the original position after the melting of ice has been completed. If ice is used, the packaging should be leak-proof. If dry ice is used, the outer packaging should permit the release of carbon dioxide gas.

(c) Substances shipped at ambient temperature

The primary receptacles should be heat sealed and, instead of being made of glass, should be of plastics capable of withstanding very low temperatures. The secondary packaging should also be capable of withstanding very low temperatures and in most cases will need to be fitted over individual primary receptacles. Requirements for shipment of liquid nitrogen should also be observed.

Whatever the intended temperature of shipment, the primary and secondary packaging used for infectious substances should be capable of withstanding a pressure differential of 95 kPa (0.95 bar) between sea level and an altitude of 12 192 m (40 000 ft).

Infected animals

Live vertebrate or invertebrate animals should not be used for the transport of an infectious agent unless the agent cannot be shipped by any other means. Infected animals should be contained in worm-tight packaging such as that used for the transport of germ-free animals. The consignment should be declared and labelled as "live animals" and as "infectious substance".

Any animal suspected to have been exposed to the consignor it should be properly disinfected or quarantined before shipment. All labels ("live animal" and "infectious substance" labels) should be affixed.

Test requirements for packagings

6.1.5 In addition to the general provisions of paragraphs 6.1.1 to 6.1.4 (except 6.1.4.1) at least one sample of each type of packaging (including inner packaging filled with water, except in the case of packagings for live animals where a weight equivalent to that of the animals should be used) should be subjected to the cumulative effects of the free drop test, and of either puncture test a or puncture test b, as applicable. The packages should be sprayed to a water spray heavy enough to keep its entire exposed surface (except the bottom) continuously wet during a period of 30 minutes prior to being subjected to the tests.

(a) Free drop test

(i) Packages exempted from this test
None

(ii) Size of sample
Five packages (one for each drop)

(iii) Target
The target should be a rigid, smooth, flat and horizontal surface.

or other documents required by his national authorities. Upon receipt of known or suspected high-risk infectious substances of human or animal origin, the consignee should immediately acknowledge receipt to the consignor by the most rapid means of communication available to him.

The consignee should have a suitably equipped and adequately staffed receiving area. All incoming consignments of infectious substances should be unpacked in areas designated for this purpose and under conditions of containment commensurate with the degree of danger presented by the infectious substances. A record shall be kept of the receipt of all substances.

ACTION TO BE TAKEN IN THE EVENT OF DAMAGE OR LEAKAGE

6.17 If any person responsible for the carriage or opening of packages containing infectious substances becomes aware of damage to or leakage from such a package, he should:

(a) avoid handling the package or keep handling to a minimum;

(b) inspect adjacent packages for contamination and put aside any that may have been contaminated;

(c) inform the appropriate public health authority or veterinary authority, and provide information on any other countries of transit where persons may have been exposed to danger;

(d) notify the consignor and/or the consignee.

INTERNATIONAL NOTIFICATION

6.18 A public health or veterinary authority to which actual or suspected leakage from or damage to a package is reported should notify the authorities of any countries in which the package may have been handled, including countries of transit."

Annex I

SPECIAL RECOMMENDATIONS RELATING TO CLASS 7
(ST/SG/AC.10/1/ ... - Chapter 7)

Amendments adopted by the Committee

Paragraph 7.4

Amend the existing text (Orange Book), as follows:

7.4. A full list of radioactive nuclides is included in the IAEA "Regulations for the safe transport of Radioactive Materials."

Annex 3

GENERAL RECOMMENDATIONS ON PACKING
(ST/SG/AC.10/1/Rev.1 - Chapter 9)

Amendments adopted by the Committee

Paragraph 9.34

Replace "; and", at the end of the paragraph, by a full stop. Add a new paragraph after (f):

"Every re-usable packaging liable to undergo a reconditioning process which might obliterate the packaging markings shall bear the marks indicated in paragraph 9.34 (a), (b), (c) and (d) in a permanent form (e.g. embossed) able to withstand the reconditioning process.".

Paragraph 9.34.1.

Add to the end of paragraph:

"For metal receptacles requiring embossment, the letters UN may be applied in place of the symbol".

Paragraph 9.34.2.

Replace existing text by:

"9.34.2 After reconditioning a packaging the reconditioner shall apply to it, near the permanent marks required by paragraph 9.34, a mark specifying:

(g) the name of the State in whose territory reconditioning was carried out (the distinguishing sign of vehicles in international traffic and the initials of the competent authority shall be accepted);
(h) the name or symbol of the reconditioner;
(i) the year of reconditioning; and
(j) in the case of a packaging subject to a leakage test, the symbol "L".

Paragraph 9.34.3.

Read:

"Examples of markings:

for a NEW packaging:

1A1/Y1.4/76 (as in 9.34 (a), (b), (c) and (d)),
NL/VL123 (as in 9.34 (e) and (f));

for a RECONDITIONED packaging:

1A1/Y1.4/76 (as in 9.34 (a), (b), (c) and (d)),
NL/RB/77/R (as in 9.34.2 (g), (h), (i) and (j))."

Paragraphs 2.62, 2.69, 2.70, 2.80, 2.85, 2.87, 2.92, 2.95, 2.98, 2.101, 2.109, 2.125, and 2.137 should read:

"Method of loading

"... packages should be capable of withstanding for a period of 24 hours a superimposed weight placed on a flat surface resting on the top of the package, equivalent to the total weight of identical packages which could be stacked on it during transport. The minimum stacking height should be 3 m."

Paragraph 2.72

Replace the second sentence by the following:

"The water-resistance of the outer surface shall be such that the increase in weight, as determined in a test carried out over a period of 30 minutes by the Cobb method of determining water absorption, is not greater than 155 g/cm^2 - see ISO International Standard 535 - 1976 (E)."

Paragraph 2.101

Delete the paragraph: "However, for sea transport, ... is 6 m.".

Paragraph 2.102

Under sub-section "Method of testing", delete last sentence, starting with "However ... ...".

Paragraph 2.113

Read:

"5HH2 - The bag should be rendered waterproof so as to prevent all entry of moisture, by means of:

Separate inner liners of waterproof paper (e.g. waxed kraft, kraft union or polyethylene-coated kraft); polyethylene film bonded to the inner or outer surface or separate inner liner(s) of plastics. Maximum net weight: 50 kg."

Annex 10

SPECIAL RECOMMENDATIONS ON PACKING FOR DIVISION 5.2
(ST/SG/AC.10/1/Rev.1 - Chapter 11)

Amendments elected by the Committee

Amend title of second section as follows:

"Temperature control requirements"

Paragraph 11.10

Replace existing paragraph by:

"11.10 The control temperature is the maximum temperature at which an organic peroxide can be safely transported during a prolonged period of time. The control temperature is derived from the self-accelerating decomposition temperature (SADT) as follows:

Table 11.1

	SADT	Control temperature
A	20°C or less	Deduct 20°C from SADT
B	over 20°C to 35°C	Deduct 15°C from SADT
C	over 35°C	Deduct 10°C from SADT

The SADT for organic peroxides is to be determined by conducting the tests with with 5°C intervals."

Paragraph 11.11

Read first sentence:

"11.11 The SADT is defined for the purpose of organic peroxides as the lowest temperature at which self-accelerating decomposition may occur in the package used in transport."

Paragraph 11.13

Read first line:

"11.13 The temperature of those organic peroxides for which no control temperature ...".

Paragraph 11.14

Read first line:

"11.14 The organic peroxides for which a control temperature is indicated should be ...".

Paragraph 11.16

Read:

"11.16 Liquid air or liquid oxygen must not be used as a refrigerant. The refrigeration temperature must be selected so as to avoid any [illegible] separation of phases."

Add the three new following paragraphs after paragraph 11.16:

"11.17 If during transport the control temperature is exceeded an alert procedure has to be started involving repair of the refrigeration machinery or an increase in the cooling capacity (e.g. by adding liquid or solid refrigerants), preparation of a thermal protection for the product and a temperature check at close intervals.

11.18 If the emergency temperature is reached, emergency procedures (e.g. disposal of the organic peroxide) have to be started.

11.19 The emergency temperature can be derived from the control temperature as follows:

Table 11.1

Control temperature	Emergency temperature
0°C or less	not [illegible] to the control temperature
over 0°C	not [illegible] to the control temperature

Renumber the existing paragraphs 11.17 to 11.33 to read 11.20 to 11.36.

Paragraph 11.36

Add under heading "List of packagings":

"(see also paragraph 11.36)"

Reverse the order of listing of packaging numbers P10 and P12 (P10 becoming P12, and P12 becoming P10).

Add new packaging number under P11:

"P11 Plastics bottles, jars, cans or boxes packed in a fibreboard box, fibreboard drum, plywood drum or wooden box..... 500 g 1 kg"

Delete packaging numbers P26 and P5.

Read figure in fourth column in regard of packaging number P26b: "220 l".

Amend description of packaging number P27 to read:

Amend P27 as follows:

"P27 Tank-wagons, tank-lorries. The tanks should be made of aluminium of at least 99.5 per cent purity or of steel, the compatibility of the latter to be certified by the competent authority. To prevent the tank bursting in any event, including fire engulfment, it should be provided with pressure relief devices which are adequate in relation to the capacity of the tank and to the nature of the product carried. The devices must also be compatible with the product."

Add new paragraph P29:

"P29 Plastics container in a steel frame. Design and construction to be certified by the competent authority. ..... - 1000 l"